

Energized Work Procedures

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Approved by [REDACTED]

Stations

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Active Divisions/Departments

FEMC

Raytheon Polar Services Company

Facilities, Engineering, Maintenance, and Construction (FEMC)

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Purpose

This procedure outlines the necessary steps for conducting energized work primarily at McMurdo Station, with minor narratives on work at the South Pole and Palmer Stations.

Responsibilities

Maintenance Manager or Designee

Receives copy of completed energized work form from Line Crew Foreman/designee.

Line Crew Foreman or Designee

- Decide to conduct energized work.
- Determine effects of localized power outage on user facility.
- Determine whether a job will be conducted while a feeder or other equipment is energized.
- Contact the Power Plant Manager/designee and on-duty operator to coordinate feeder outage once the decision is made to conduct energized work
- Conduct any energized work according to procedures.
- Determine if energized work can be conducted safely.
- Deliver copy of completed energized work form to the Maintenance Manager/designee.

Other Personnel

RPSC Safety personnel, FEMC McMurdo Line Crew Work Center, and Power Plant personnel

Discussion

At McMurdo Station the linemen conduct the majority of their work on the station's five feeders while they are energized. This practice is necessary for the timely completion of line crew work and continued science support. Energized work minimizes the impact of maintenance on the science community. Frequent power outages for energized work would impact the rest of the community by creating work stoppages due to power outages at work centers. Outages would also increase the workload for maintenance personnel, since all systems must be checked for proper operation after power is restored.

The FEMC Line Crew Foreman/designee has the responsibility for deciding to conduct energized work. Since energized testing, repair, and maintenance work is a commonly accepted industry practice, all qualified linemen should be familiar with the proper equipment, work, and safety practices for this process.

At the South Pole and Palmer Stations energized work is usually done only in emergency situations, and they should follow the procedures outlined for McMurdo Station using abbreviated processes as applicable (dependent upon station resources).

This procedure provides the necessary steps for conducting energized work in the safest manner possible. It is important that all personnel follow the steps as outlined in this procedure.

Requirements

Tools and Equipment

Personal Protective Equipment (PPE), which includes insulating wearing apparel such as rubber gloves, rubber sleeves, protective goggles, and headgear. It can include insulating shields, covers, mats, and platforms. Live line work includes insulating tools for handling or testing energized equipment or lines, safety straps, protective grounding materials and devices, etc.

Determining Need for Energized Work

The Line Crew Foreman/designee is responsible for determining when to conduct energized work. To determine whether a job will be conducted while a feeder or other

equipment is energized or to call for a power outage, the Line Crew Foreman/designee uses the following steps:

1. Determine effects of localized power outage on user facility.
2. Determine whether or not to conduct energized work.
3. Contact the Power Plant Manager/designee and on-duty operator to coordinate feeder outage once the decision is made to conduct energized work
4. Conduct any energized work according to the following procedures.
5. Determine if energized work can be conducted safely.

Results The Line Crew Foreman/designee decides to conduct energized work or determines the need for a power outage. For information on conducting a power outage, refer to the Power Plant Operating Procedures.

Conducting Notification Process for Energized Work

McMurdo Station

To notify all concerned personnel, the Line Crew Work Center completes the following steps:

1. Notify Power Plant personnel of the date and time that the energized work will be performed.

The Power Plant must receive this notification at least 24 hours in advance of the required energized work.

2. Notify the Firehouse dispatch just prior to performing the energized work.
3. Complete and submit an *Energized Work Permit* (EN-MPS-605a) to the Power Plant on the morning of the scheduled work date.

This form must be given directly to the Power Plant operator on duty, who then posts the form in a designated area of the control booth until the work is completed.

4. Deliver copy of completed energized work form to the Maintenance Manager at Building 175.

This ensures that the Maintenance Manager is aware of upcoming energized work. A copy of the form will be kept in the FEMC Electrical Work Center files.

Note An electronic version of the form is available on the Master List.

Results After completing these steps, all notification is completed as required.

South Pole and Palmer Stations

At the South Pole and Palmer Stations energized work is usually done only in emergency situations and should follow the procedures outlined for McMurdo Station using abbreviated processes as applicable (dependent upon station resources).

Conducting Energized Work

McMurdo Station

To conduct energized work in a safe manner, the line crew uses the following steps:

1. Gather proper equipment.

To ensure that insulated gloves are properly maintained, the Line Crew Foreman sends the various sized mittens and gloves to Christchurch twice a year (half at the beginning of MAIN BODY (returns in December), and the other half at the end of MAIN BODY (returns at WINFLY)) for inspection. In addition, prior to performing any energized work, linemen conduct air tests on the gloves to be used.

Note Refer to Requirements section for list of equipment used by linemen for energized work. To ensure that all PPE and line work equipment is properly maintained, RPSC will follow standards outlined in the NESC (National Electrical Safety Code), Part 4, Sections 410, 420, and 446.

2. Assign proper personnel to task, which should include at least two journeymen.

Note Only qualified persons may work on electric circuit parts or equipment that has not been de-energized. Necessary qualifications include 8,000 hours in the linemen trade and a journeyman ticket or license. All Line Crew personnel must be qualified and capable of working safely on energized circuits. They must also be familiar with the proper use of safety practices, personal protective equipment, insulating and shielding

materials, and insulated tools. FEMC shall ensure that employees are trained in live-line practices, which include rubber glove, hot stick, or bare-hand method, before using these techniques on energized lines. Refer to NESC Rule 446A.

3. Establish radio contact with the Power Plant operator and the Firehouse when on the job site.
4. Request an OK from the Power Plant operator to begin energized work, specifying the feeder and crew location.
5. Receive confirmation of request from Power Plant operator, who should repeat the exact feeder and location to ensure that all parties are aware of the work site.
6. Reconfirm the work site with the Power Plant.
7. Ensure that the Firehouse is also in radio contact.

Note The Line Crew must remain in constant contact with the Power Plant operator and the Firehouse while conducting energized work.

8. Complete all job steps required for the work, e.g., if the work is a PM, then complete the job steps as listed for the PM.

Results After completing these steps, the Line Crew safely completes the energized work.

South Pole and Palmer Stations

At the South Pole and Palmer Stations energized work is usually done only in emergency situations and should follow the procedures outlined for McMurdo Station using abbreviated processes as applicable (dependent upon station resources).

Completing Energized Work Documentation

McMurdo Station

To ensure that all paperwork for the energized work is properly complete, the Line Crew and Power Plant use the following steps:

1. Receive sign off of the work permit from the Line Crew Foreman as being completed.
This sign off must include time and date as well as a signature.
2. Give the completed form to the Power Plant Supervisor, who files the form.
3. The Power Plant operator enters the time in and time out of the work project in the Power Plant logbook.

Once all documentation for the energized work is signed and filed, the process is complete.

South Pole and Palmer Stations

At the South Pole and Palmer Stations energized work is usually done only in emergency situations and should follow the procedures outlined for McMurdo Station using abbreviated processes as applicable (dependent upon station resources).

References

Power Plant Operating Procedures (Area Directorates)

National Electrical Safety Code, Sections: 12, 126; 441A, B, and C; Tables 441-1 to 441-4; 443A-L; and 446A-D

Energized Work Permit (EN-MPS-605a)

Records

See “*Energized Work Permit*” under the FEMC-MPS tab of the *FEMC Records Management Table* (EN-D-226a).

(All forms are located on the common drive I://perm/procedures/Master List/FEMC/FEMC forms)